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Female athletes who cut calories risk leg injury

Too little fuel can drop estrogen and cause stress fractures

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ST. LOUIS - Women athletes watching their waistlines could be more susceptible to leg pain and stress fractures, according to a small study.

A Saint Louis University study looked at 76 women college athletes playing NCAA Division I sports and found that abnormal and low-calorie eating habits could put them at greater risk for injury.

"It causes people to miss practices and competitions, and I wanted to understand if two people were undergoing the same exercise regime, why only one of them would have leg pain," said Dr. Mark Reinking, a physical therapy expert who led the study.

"We don't really know a lot about this in college and high school athletes," he said. The research was published in this month's American Journal of Sports Medicine.

The old-school prescription for sore legs — running less or wearing different shoes — doesn't really help alleviate the pain, Reinking said. Diet appears to be the single most important factor, he said.

The study found that women with "disordered eating," including bulimia and anorexia, or those who take in too few calories because of dieting, experienced decreased estrogen production, a key factor in bone development, Reinking said.

Drop in estrogen

When people burn more calories than they consume, he explained, they release fewer hormones, which slows down menstrual cycles and decreases estrogen in the body.

"This research is well understood in the medical community," said John O'Kane, a sports medicine physician and associate professor at the University of Washington in Seattle. "I think that there's been a lot of work by the NCAA and others to make people more aware of this, it used to be coaches would tell their female athletes, 'You know you are training hard enough when you stop having your period.' Today, we understand that (no menstrual cycle) means a calorie deficiency and it can be dangerous."

Reinking collected survey data on eating behaviors from female soccer, field hockey and volleyball players, as well as cross-country runners. The data included years in school sports, menstrual history, bone mineral density, body-mass index, incidence of prior leg pain and flat feet.

Three-quarters of those athletes in the study had leg pain in the past, especially the cross-country runners, according to the research. Twenty-six percent experienced leg pain during the season, and all of them had had leg pain previously.

The women who developed stress fractures also had more abnormal eating habits.

Female Athlete Triad

Reinking said the so-called "Female Athlete Triad" is what led him to do the research. Well-known in sports medicine, the triad is three interrelated health problems seen in female athletes that include low energy, menstrual disorders and weak bones. At its worst, it involves eating disorders, absence of periods and osteoporosis.

His study comes after the American College of Sports Medicine this summer urged coaches and women athletes to better understand the health challenges they face, especially the Female Athlete Triad.

Reinking called the study one of only a few of its kind to quantify the condition and the risk factors in college students. He said a similar study in 1994 tracked stress fractures in college athletes and found they were more common in women than men.

"From my experiences, this makes perfect sense. All the talk used to be (only) about eating disorders," said Amy Tush, coach for Northwestern University's women's cross-country team in Evanston, Ill.

Tush said many athletes get bad advice on the Internet or elsewhere about how many calories to consume and what to eat.

"It's really common in our sport," she said. "Our kids just don't always know the best way to fuel their bodies."